

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P916023

Luminaire Tested: DFN2DIP-4P4F0-070D060US930-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P916023
REPORT IS A COMBINATION OF REPORTS P900643 AND P897523
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-4P4F0-070D060US930-FLLONL
Description: 4 foot, 90deg - 4way Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

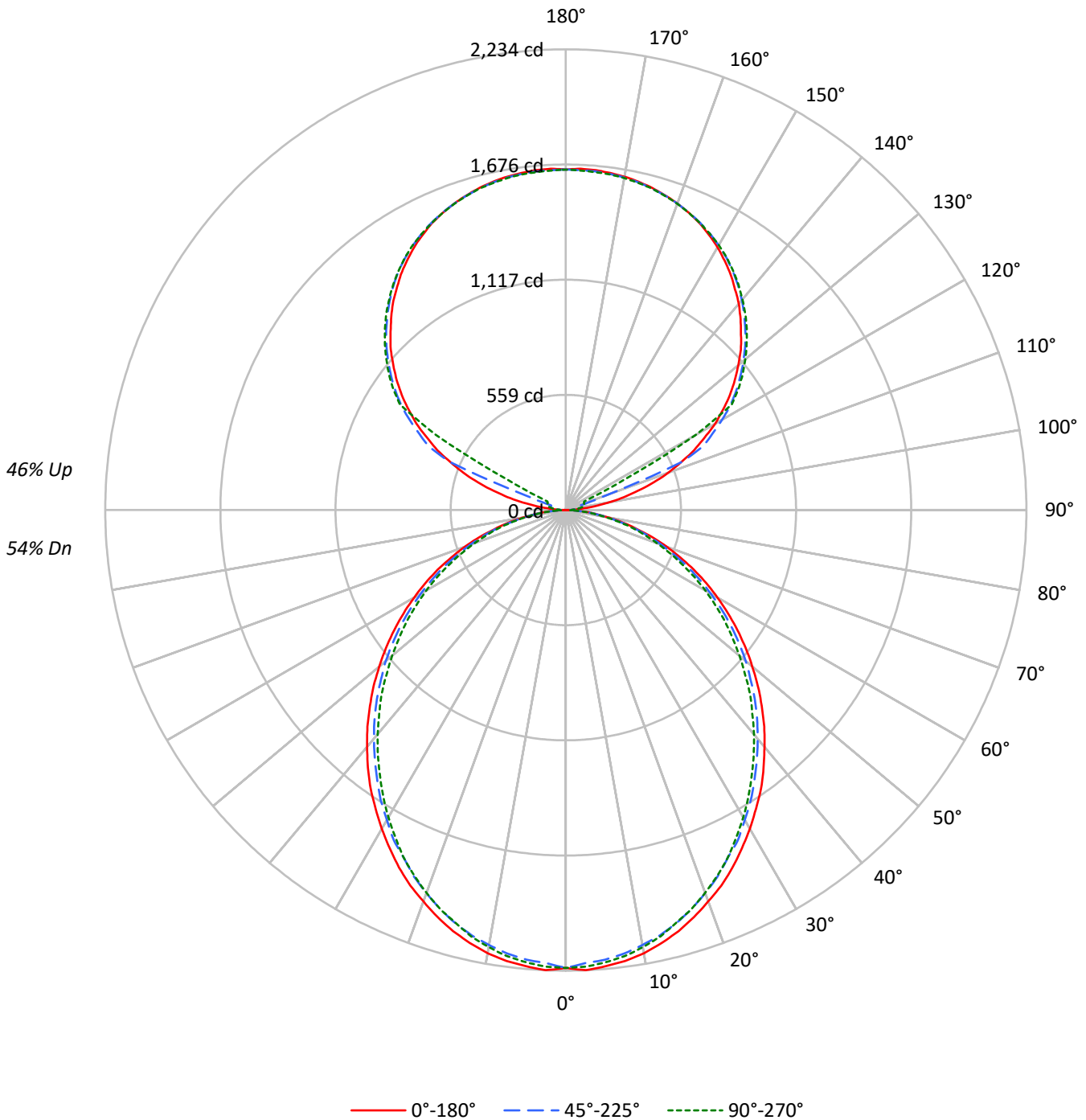
Summary

Lumens per Lamp: N/A
Luminaire Lumens: 10492.9 lumens
Efficiency: N/A
Efficacy: 84.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 4.07' x L: 4.07' x H: 0.1')
CIE Type: General Diffuse

Input Watts (W): 124.6
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9789
Total Harmonic Distortion (THDi): 0.074
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Luminous Intensity Polar Plot





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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	108	108	108	108	100	100	100	100	85	85	85	72	72	72	60	60	60	54				54
1	99	94	90	87	91	88	84	81	75	73	70	63	62	60	53	52	50	45				45
2	90	82	76	71	83	77	71	67	66	62	58	56	53	50	46	44	42	38				38
3	82	72	65	59	76	67	61	56	58	53	49	49	46	42	41	38	36	32				32
4	75	64	56	50	69	60	53	47	52	46	42	44	40	36	37	34	31	28				28
5	69	57	49	43	64	53	46	41	46	40	36	39	35	32	33	30	27	24				24
6	63	51	43	37	59	48	41	35	42	36	31	36	31	28	30	27	24	21				21
7	59	46	38	33	54	43	36	31	38	32	28	32	28	24	27	24	21	19				19
8	54	42	34	29	50	39	32	28	34	29	25	30	25	22	25	22	19	17				17
9	51	38	31	26	47	36	29	25	32	26	22	27	23	20	23	20	17	15				15
10	47	35	28	23	44	33	27	22	29	24	20	25	21	18	22	18	16	14				14

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1441	1441	1441
5°	1443	1421	1431
10°	1431	1402	1412
15°	1411	1380	1382
20°	1382	1348	1352
25°	1354	1310	1316
30°	1319	1275	1271
35°	1285	1233	1224
40°	1244	1191	1178
45°	1203	1149	1132
50°	1158	1105	1078
55°	1111	1054	1029
60°	1058	993	973
65°	1000	930	906
70°	926	854	835
75°	823	762	770
80°	700	646	644
85°	509	444	435

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
 Vertical Angle: 45°
 Luminance: 1203 cd/sqm



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	209.0	2.0
10°-20°	588.1	5.6
20°-30°	864.2	8.2
30°-40°	1003.7	9.6
40°-50°	1002.5	9.6
50°-60°	874.2	8.3
60°-70°	646.2	6.2
70°-80°	365.6	3.5
80°-90°	99.4	0.9
90°-100°	54.4	0.5
100°-110°	202.9	1.9
110°-120°	538.2	5.1
120°-130°	892.7	8.5
130°-140°	948.2	9.0
140°-150°	881.3	8.4
150°-160°	708.5	6.8
160°-170°	456.5	4.4
170°-180°	157.1	1.5
0°-30°	1661.3	15.8
0°-40°	2665.1	25.4
0°-60°	4541.7	43.3
0°-90°	5652.9	53.9
90°-120°	795.6	7.6
90°-150°	3517.8	33.5
90°-180°	4840.0	46.1
0°-180°	10492.9	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2221	2221	2221	2221	2221	
5°	2221	2212	2189	2206	2202	211
15°	2114	2101	2073	2082	2071	595
25°	1913	1896	1860	1864	1860	880
35°	1651	1629	1595	1582	1572	1031
45°	1343	1328	1296	1273	1264	1037
55°	1016	1004	978	952	942	909
65°	686	673	651	632	621	678
75°	359	355	344	331	335	383
85°	88	85	83	77	75	98
90°	1	14	24	30	32	10
95°	78	38	47	53	51	92
105°	363	399	73	86	91	388
115°	687	707	737	184	98	676
125°	971	987	1009	1018	1021	866
135°	1202	1221	1232	1244	1241	928
145°	1394	1393	1413	1422	1416	872
155°	1535	1524	1539	1546	1536	707
165°	1618	1610	1614	1622	1614	457
175°	1654	1646	1648	1657	1645	157
180°	1651	1651	1651	1651	1651	



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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2220.6	2220.6	2220.6	2220.6	2220.6
2.5°	2233.6	2222.9	2199.3	2220.6	2216.6
5°	2220.6	2212.3	2188.7	2205.7	2201.6
7.5°	2205.7	2193.0	2169.4	2186.7	2182.4
10°	2182.4	2167.4	2141.8	2158.8	2152.5
12.5°	2150.2	2137.5	2111.9	2122.5	2118.2
15°	2114.0	2101.3	2073.4	2082.0	2071.3
17.5°	2069.1	2056.4	2028.5	2039.2	2028.5
20°	2019.9	2007.3	1977.3	1983.7	1975.3
22.5°	1971.0	1951.7	1923.9	1923.9	1919.5
25°	1913.3	1896.2	1860.0	1864.1	1860.0
27.5°	1849.1	1834.2	1806.5	1800.2	1789.5
30°	1785.3	1768.0	1736.1	1729.7	1721.1
32.5°	1716.8	1704.1	1669.9	1657.0	1648.4
35°	1650.7	1629.4	1595.1	1582.2	1571.6
37.5°	1575.9	1556.6	1522.4	1507.5	1496.8
40°	1499.1	1481.9	1447.6	1428.6	1420.0
42.5°	1424.3	1407.1	1373.1	1351.6	1338.9
45°	1343.2	1328.3	1296.1	1272.8	1264.1
47.5°	1264.1	1249.2	1215.0	1191.4	1178.8
50°	1180.8	1170.1	1140.2	1110.4	1099.7
52.5°	1099.7	1084.8	1057.1	1033.6	1018.6
55°	1016.5	1003.6	978.0	952.4	941.8
57.5°	933.2	922.5	894.6	869.0	860.5
60°	849.8	841.4	811.5	788.0	781.6
62.5°	768.7	753.7	732.5	711.2	702.5
65°	685.6	672.6	651.3	632.1	621.4
67.5°	600.1	589.3	570.2	555.3	546.7
70°	521.1	512.5	493.2	478.3	469.9
72.5°	439.9	431.4	420.7	405.8	399.4
75°	358.6	354.6	343.6	331.0	335.3
77.5°	286.2	277.5	273.2	266.8	260.6
80°	213.6	211.4	207.1	200.7	196.4
82.5°	145.2	145.2	143.2	134.6	134.6
85°	87.5	85.4	83.4	76.8	74.8
87.5°	38.5	34.2	29.9	23.6	21.3
90°	1.1	14.3	23.8	29.9	32.2
92.5°	29.9	25.1	28.6	31.1	32.2
95°	77.6	38.2	46.6	52.7	51.4
97.5°	139.7	41.8	60.8	64.6	65.7
100°	211.5	47.8	68.1	77.6	80.0
102.5°	290.2	288.0	70.5	83.6	87.2
105°	363.1	399.0	72.9	85.9	90.8
107.5°	448.0	477.8	75.3	88.4	93.2
110°	529.3	554.2	209.1	89.7	94.3



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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	605.7	627.1	606.8	91.9	95.6
115°	686.9	707.2	737.1	184.0	98.0
117.5°	757.3	781.2	801.6	630.7	317.7
120°	836.3	854.1	875.7	890.0	728.7
122.5°	903.0	922.2	946.2	953.2	954.6
125°	971.2	986.8	1009.4	1017.8	1021.3
127.5°	1033.3	1050.0	1068.0	1079.9	1081.1
130°	1091.8	1111.0	1124.1	1137.3	1136.1
132.5°	1151.6	1167.2	1180.2	1191.0	1189.8
135°	1201.8	1221.0	1231.6	1243.7	1241.2
137.5°	1254.3	1268.6	1280.7	1292.6	1289.1
140°	1305.6	1315.3	1328.4	1339.1	1333.2
142.5°	1348.7	1357.1	1372.6	1382.1	1376.1
145°	1394.2	1392.9	1413.2	1421.6	1415.6
147.5°	1433.5	1429.9	1450.2	1456.1	1451.5
150°	1471.8	1463.4	1482.5	1489.6	1483.7
152.5°	1504.0	1494.4	1512.3	1519.6	1511.2
155°	1535.0	1524.4	1538.7	1545.8	1536.3
157.5°	1560.2	1550.6	1561.4	1569.8	1560.2
160°	1581.7	1574.4	1581.7	1588.8	1580.5
162.5°	1600.7	1593.6	1599.5	1607.9	1597.2
165°	1617.5	1610.4	1613.9	1622.3	1613.9
167.5°	1630.6	1623.4	1627.1	1635.5	1624.6
170°	1641.4	1634.2	1636.6	1644.9	1634.2
172.5°	1648.5	1641.4	1643.8	1652.2	1641.4
175°	1654.5	1646.1	1648.5	1656.8	1644.9
177.5°	1656.8	1648.5	1649.8	1658.2	1647.4
180°	1650.9	1650.9	1650.9	1650.9	1650.9



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CIE UGR TABLE:

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	8.91	9.81	9.83	10.75	11.96	8.47	9.36	9.39	10.30	11.52
	3H	10.58	11.38	11.51	12.33	13.57	10.09	10.89	11.02	11.84	13.08
	4H	11.17	11.93	12.12	12.89	14.14	10.68	11.44	11.63	12.39	13.64
	6H	11.58	12.28	12.54	13.24	14.50	11.08	11.78	12.04	12.74	14.00
	8H	11.69	12.35	12.65	13.33	14.59	11.18	11.85	12.15	12.83	14.09
	12H	11.74	12.37	12.71	13.35	14.63	11.23	11.86	12.20	12.84	14.12
4H	2H	9.38	10.14	10.33	11.09	12.34	9.02	9.78	9.98	10.74	11.99
	3H	11.25	11.89	12.22	12.87	14.13	10.84	11.48	11.81	12.47	13.73
	4H	11.97	12.55	12.95	13.53	14.82	11.55	12.13	12.52	13.11	14.39
	6H	12.50	13.00	13.48	14.00	15.28	12.06	12.56	13.05	13.57	14.85
	8H	12.65	13.12	13.64	14.11	15.41	12.21	12.68	13.20	13.67	14.97
	12H	12.73	13.15	13.73	14.16	15.47	12.28	12.70	13.28	13.71	15.02
8H	4H	12.17	12.64	13.16	13.64	14.94	11.80	12.26	12.78	13.26	14.56
	6H	12.81	13.20	13.83	14.24	15.53	12.43	12.82	13.44	13.85	15.15
	8H	13.04	13.38	14.06	14.40	15.72	12.64	12.99	13.67	14.01	15.33
	12H	13.17	13.47	14.20	14.49	15.85	12.76	13.06	13.79	14.08	15.44
12H	4H	12.16	12.58	13.17	13.59	14.90	11.79	12.22	12.80	13.23	14.53
	6H	12.84	13.18	13.86	14.21	15.52	12.47	12.81	13.49	13.84	15.15
	8H	13.09	13.39	14.12	14.41	15.77	12.71	13.01	13.74	14.03	15.39